# SEC Modification Proposal, SECMP0046, DCC CR 1188

## Allow DNOs to Control Electric Vehicle Chargers Connected to Smart Meter infrastructure

## Preliminary Impact Assessment (PIA)

| | |
|---|---|
| **Version:** | **0.5** |
| **Date:** | **6th September, 2019** |
| **Author:** | **DCC** |
| **Classification:** | **DCC PUBLIC** |

Data Communications Company

# Contents

# 1 Document History

## 1.1 Revision History

| Revision Date | Revision | Summary of Changes |
|---|---|---|
| 29/08/2019 | 0.1 | Initial version |
| 06/09/2019 | 0.5 | Updates following DCC review |
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## 1.2 Associated Documents

This document is associated with the following documents:

| Ref | Title and Originator's Reference | Source | Issue Date |
|---|---|---|---|
| 1 | SECMP0046 Business Requirements v0.9 | SECAS | 22/07/2019 |

References are shown in this format, [1].

## 1.3 Document Information

The Proposer for this Modification is Richard Hartshorn of SSE Networks. The original proposal was submitted in February 2018.

The Preliminary Impact Assessment was requested of DCC in August 2019 after updated requirements were issued by SECAS.

The term DNO (Distribution Network Operator) is used interchangeably with Electricity Distributor in this document.

# 2 Context and Requirements

In this section, the context of the Modification, assumptions, and the requirements are stated.

The assumptions and business requirements have been provided by SECAS, the Proposer, and the Working Group.

## 2.1 Problem Statement

The number of people owning Electric Vehicles (EV) is increasing across Great Britain. This increase will lead to a larger quantity of domestic EV chargers being installed at domestic premises and connecting to electricity networks. The electrical rating of EV chargers is also increasing in order to achieve more rapid charging.

An increase in electricity demand on low voltage networks has the potential to lead to power outages due to fuses blowing or cables supplying homes overheating.

It is likely that clusters of domestic EVs will begin to appear in the next few years, increasing the demand on low voltage networks. This has the potential to lead to the fuse blowing and/or overheating of the cables supplying these areas, leading to power outages for all households connected to those feeders. Typically, a single feeder could serve up to 100 properties. Supply restoration may take from around an hour (to attend site and replace the fuse) but may require extensive work to provide a long-term capacity increase, which could take several weeks.

The conventional method of dealing with this problem is to reinforce the DNO networks by installing new fuses, entire transformers and/or replacing the underground cables supplying entire streets all with the associated cost and high level of disruption.

Previous work has estimated that the potential savings from having smarter solutions to this problem is £2.2 billion. A number of studies have shown that managing the charging of EVs at times of network stress can defer or negate this cost, including the My Electric Avenue project, which reported extensively on the potential benefits of smart charging. Since then, many studies have highlighted the benefits, and even necessity, of smart charging as the UK decarbonises transport (e.g. Electric Nation interim results, Aurora Energy Research, National Grid Future Energy Scenarios).

Due to the localised nature of the problem that DNOs face at a street level, it is considered essential that this action is taken by the DNO rather than other parties (e.g. supplier or aggregator) in order to be able to respond quickly and minimise the complexity of the process.

This Modification will allow Electricity Distributors to alter charging of domestic Electric Vehicles (EV), targeted at preventing overloading events on low voltage networks. This intervention is intended to be used where the lead time to implement alternative solutions may lead to network outages. The changes implemented as a result of this Modification are not intended to replace any current standard processes for prevention of an overloading event.

## 2.2 Assumptions and Scope

The following assumptions are made in developing the solution design specification.

1. An Electric Vehicle charger will not be defined as a SMETS Device, meaning:

- EV chargers will not join a Home Area Network (HAN);
- It will not be possible to send any Service Request with a target of EV charger;
- GBCS will not be updated to enable HAN communications with an EV charger.

2. Control of EV chargers will be enabled via Auxiliary Load Control Switch (ALCS) / HAN Connected Auxiliary Load Control Switch (HCALCS), and:

   - Electricity Distributors will be able to control the EV charger via ALCS / HCALCS, meaning the Electricity Distributers User Role will become eligible users for identified Service Requests (and will not have to establish relationships with relevant Import Suppliers to send such instructions);
   - Responsibility for installing HCALCS is out of scope

3. Whether an EV Charger can interpret an HCALCS signal is out of scope of this Modification, meaning:

   - An HCALCS and EV charger may be wired in series, with the resulting being that power to the EV charger is cut;
   - Dependent on how the market develops, an EV charger may be able to identify the switch's state and interpret this as a signal to charge at different amperages (not necessarily on or off). This will occur through competitive forces or via other governance such as OLEV secondary legislation.

4. Requirements to systematically populate details of the demand controlled by HCALCS may become mandatory to enable accurate identification of load under control and to minimise the risk of accidental curtailment of load. At this stage, this is considered out of scope.

## 2.3 Business Requirements

This section contains the business requirements for the Modification as a whole, of which, not all apply to the DCC. Based on these requirements a full solution will be developed.

Of the DCC impacting requirements, some are considered non-essential, as discussed in Working Groups and agreed with the Proposer. Non-DCC impacting requirements (labelled non DCC and expanded in grey text) concern governance and obligations that lie elsewhere, and have not been considered by the Service Providers in their responses. The DCC are expected to assess the impact of the costs of the relevant requirements against the solution.

| Ref. | Requirement |
|---|---|
| 1 (non DCC) | Electricity Distributors will monitor load demand on low voltage networks (Feeders) |
| 2 (High Priority) | Electricity Distributors will have the ability to alter charging amperage of domestic Electric Vehicle chargers |
| 3 (Medium Priority) | Electricity Distributors will be able to join necessary devices (rather than requesting an Import Supplier to do so) |

| | |
|---|---|
| 4 (Medium Priority) | The customer can decline alteration of electricity supply to their domestic Electric Vehicle chargers |
| 5 (non DCC) | Electricity Distributors will report instances when they alter domestic Electric Vehicle charging to Ofgem |
| 6 (non DCC) | Governance that is out of scope for this modification and out of scope for the SEC |

*Table 1: Business Requirements for SECMP0046, CR1188*

### 2.3.1 Requirement 1 (non DCC)

**Electricity Distributors will monitor load demand on low voltage networks (Feeders)**

Electricity Distributors will measure the electricity demand of low voltage networks that have been assessed as "high risk" and assess if load is likely to exceed the capacity of that particular low voltage network. The Electricity Distributor must:

- Determine which low voltage networks are 'high risk';
- Monitor the electricity load on the "high risk" low voltage network; and
- Assess if the measured load exceeds / will likely exceed the capacity of the low voltage network.

### 2.3.2 Requirement 2 (High priority)

**Electricity Distributors will have the ability to alter charging amperage of domestic Electric Vehicle chargers**

If an Electricity Distributor deems that one of their low voltage networks is at risk of an overloading event, they will need to manage load on the network. To achieve this, all current load control methods will be used. However, failing these overload prevention methods, the Electricity Distributor will have the ability to alter charging of domestic Electric Vehicles via Smart Metering infrastructure.

**Domestic Electric Vehicle Charger**

To enable Electricity Distributors to use Smart Metering infrastructure to alter domestic Electric Vehicle charging, the Electric Vehicle charger must be connected to the Smart Metering System. Through Working Group discussions, it was decided that the preferred approach for this would be through the use of Home Area Network (HAN) Connected Auxiliary Load Control Switch (HCALCS).

The Smart Metering System connected device must:

- Be able to receive an external signal;
- Be able to react to the Command of that signal;
- Be able to send a signal;
- Be labelled accurately on the ALCS/HCALCS list on the ESME; and

- Require Certified Product Assurance (CPA).

This is applicable to the Electric Vehicle charging device and/or any device it may be connected to.

**Smart Metering Signal**

To enable Electricity Distributors to use Smart Metering infrastructure to alter domestic Electric Vehicle charging, they must be able to send the appropriate signals via the DCC. For this to occur the DCC must allow the Electricity Distributor to send a signal through the DCC Systems to a domestic Electric Vehicle charger and/or connected device at a specified Meter Point Administration Number (MPAN):

- The signal will be translated to a Critical Command by the DCC;
- The DCC will send the Command to the Smart Meter System;
- The Command will be received by the Smart Meter; and
- The charger will curtail the charging amperage of the domestic Electric Vehicle.

The signal, and any subsequent Commands, must be secure and sent via a secure network.

Priority of these signals sent to the domestic Electric Vehicle charger via the Smart Metering infrastructure will be given to the Electricity Distributor over other eligible User Roles.

The Electricity Distributor will set an Anomaly Detection Threshold (ADT) on these commands. The value of this ADT will be determined by the outcomes of Requirement 5 following.

**Signal Time Constraints**

There will only be 5-10 minutes between alert of an overloading event and failure of the low voltage network. Therefore, the targeted response time of this signal shall be 30 seconds.

The signal will curtail the domestic Electric Vehicle charging for a set period of time (see Requirement 6), where after this period the Electric Vehicle will resume normal charging. In the event that the curtailing of the Electric Vehicle charging was performed in error, or is deemed to be no longer needed, the Electricity Distributor will have the ability to send a subsequent signal within this time period to cancel the alteration of the Electric Vehicle charging.

### 2.3.3 Requirement 3 (Low[1] priority)

**Electricity Distributors will be able to join necessary devices (rather than requesting an Import Supplier to do so)**

Discussed in the Working Group, there may be a need to place an obligation on the Electricity Distributors to complete as much of the installation process as possible. Therefore, the Electricity Distributor may require the means to join the required device to alter domestic

[1] Based on the table provided in Table 1 on page 5], we have assumed this is a Low priority, rather than the Medium priority stated in document [1].

Electric Vehicle charging to the Smart Metering System. This will include all relevant signals to:

- Whitelist the device to the Communications Hub; and
- Join the device to the ESME.

The Electricity Distributor must also label the HCALCS on the ESME to reflect that it is connected to an Electric Vehicle charger. Therefore, Electricity Distributors must have the ability to send the relevant signals to do this.

### 2.3.4 Requirement 4 (Medium priority)

**The customer can decline alteration of electricity supply to their domestic Electric Vehicle chargers**

Customer consent is to be gained by the Electricity Distributor to allow them to use Smart Metering to alter charging of domestic Electric Vehicles. The customer shall have the ability to outright decline the Electricity Distributor altering the charging of their Electric Vehicle and may also have the ability to override each instance that their Electric Vehicle charging has been curtailed.

**Customer Engagement (non DCC)**

Customers of the Electricity Distributor that have a domestic Electric Vehicle charger will able to decline Electricity Distributors from altering the charging of their Electric Vehicle. The electricity Distributor must:

- Seek consent from the customer for the Electricity Distributor to alter charging of their Electric Vehicle;
- The Electricity Distributor must notify the customer at a frequency to be agreed in the event the they have limited the customers load; and
- If there is a Change of Tenancy (CoT), the Electricity Distributor must engage with the new customer and seek permission for load control.

The Electricity Distributor may also gain consent to alter the charging of other high wattage device connected to the customers Smart Metering System.

**Customer Override**

In the event that an Electricity Distributor curtails the charging of a customer's Electric Vehicle, the customer will have the ability to override this. The customer will be able to achieve this through their Smart Metering System. The Working Group discussed and agreed that, if implementation costs are low, then the Electricity Distributors will have the ability to send the relevant signals Service Requests to add and remove the auxiliary load to the Boost Button, as well as read the Boost Button Details.

### 2.3.5 Requirement 5 (non DCC)

**Electricity Distributors will report instances when they alter domestic Electric Vehicle charging to Ofgem**

When an Electricity Distributor curtails domestic Electric Vehicle charging to prevent an overloading event on a low voltage network, they will report this to Ofgem in a format to be agreed. This report is likely to contain:

- How many, MPANs have been affected;
- When this event occurred; and
- The longest events (i.e. list of “worst served” customers)

Obligations for Electricity Distributor to report to Ofgem under Supply Licence Conditions (SLC) and Regulatory Instructions and Guidance (RIGs) for RIIO-ED1 fulfil these reporting requirements.

### 2.3.6 Requirement 6 (non DCC)

**Governance that is out of scope for this modification and out of scope for the SEC**

To enable and facilitate this Modification to the SEC, further governance and regulation would be required elsewhere. While this requirement is marked as non-DCC, it has been used as the basis for the non-functional requirements listed in Appendix B.

**Electric Vehicle Charging Alteration Duration**

The period of time that a domestic Electric Vehicle has its charging altered will need to be defined. This is out of the scope of the SEC; however, it has been identified that it may be covered in DCUSA under Schedule 8 ‘Demand Control’. This may need to be amended to define a duration that Electric Vehicle charging is altered for.

**Usage limits**

Limits of use for using Smart Metering infrastructure to alter domestic Electric Vehicle charging will need to be defined. This should include maximum amount that altering of Electric Vehicle charging can be performed in:

- A 24-hour period; and
- A 30-day period.

This will need to be defined as either; the amount of times that the alteration of charging is performed in that period, or the combined duration of time within that period that charging has been altered.

If usage of Smart Metering infrastructure is consistently used to manage load on low voltage networks by altering Electric Vehicle charging, or exceeds the defined limits of use, then the Electricity Distributor will need to find suitable alternative solutions. This will be accompanied by a defined period of time that the Electricity Distributor has to seek this solution, followed by a defined period that they then have to implement the solution.

# 3 Description of Solution

As noted above, the preferred solution approach for this Modification is through the use of Home Area Network (HAN) Connected Auxiliary Load Control Switch (HCALCS).

Based on the discussions at the Working Group and the Business Requirements as provided, DCC consider the requirements for SECMP0046 to be **STABLE**.

## 3.1 High Level Solution

Elements of changes to the solution are identified in the following sections.

It should be noted that this solution is only applicable to SMETS2 devices.

## 3.2 DSP Solution

A domestic Electric Vehicle charger will be connected to an HCALCS and opening the HCALCS switch will result in termination of EV charging. The HCALCS are managed by sending commands to the associated ESME.

In order to enable Electricity Distributors to control HCALCS (and thereby Electric Vehicle Chargers), as defined in **Requirement 2**, they will be given access to send the Service Request Variants (SRVs) 7.6 and 7.8 through the DCC Data systems to the ESME.

- SRV7.6 will allow the Electricity Distributors to disconnect a HCALCS switch.
- SRV7.8 will allow the Electricity Distributors to reset a switch's status to that set by the calendar (default). This will be used if an erroneous instruction is sent, or if the anticipated reduction of Electric Vehicle charging is no longer required.

To help Electricity Distributors identify the HCALCS switch connected to the Electric Vehicle, HCALCS labels will need to be made compulsory. There are two SEC modifications related to this: SECMP0019 standardises the ALCS/HCALCS labels and SECMP0025 grants Electricity Distributors the eligibility to send SRV7.7. Although the technical solution of SECMP0019 provides the capability to manage labels, the Service Users are not currently obliged to apply labels. DCC notes that any guidance to make the HCALCS labels compulsory will need to be formalised by SEC.

To support **Requirement 3**, within DSP the following Service Requests will need to be extended to support ENOs:

- SRV 8.7.1 Join Service (Critical)
- SRV 8.8.1 Unjoin Service (Critical)
- SRV 8.11 Update HAN Device Log

These will also require new GBCS cases as the existing GBCS use cases CS03A1, CS03A2 (related to SRV 8.7.1) and CS04AC (related to SRV 8.8.1) do not give access to ENOs. SRV 8.11 could use the URP processing pattern as the corresponding GBCS use cases CCS01 and CCS02 support OU as a valid user role.

Note; the Low priority Requirement 3 will have a relatively high impact on the solution timelines and cost.

As defined in **Requirement 4**, to provide consumers with the ability to decline alteration of electricity supply to their domestic Electric Vehicle chargers, the Electricity Distributors will need to alter the boost button settings on the ESME. Prior to sending a signal to curtail an Electric Vehicle charging load, the Electricity Distributors will need to add the corresponding auxiliary load to the boost button. If an auxiliary load is added to the boost button, the consumers can override the Electricity Distributor's decision to disconnect the load by pressing the boost button on the meter. To alter the boost button configurations the Electricity Distributors will need the ability to send SRVs 7.9, 7.10, and 7.11.

- SRV7.9 will allow the Electricity Distributors to add auxiliary load to the Boost Button, granting the consumers the ability to override HCALCS.
- SRV7.10 will allow the Electricity Distributors to remove auxiliary load from the Boost button, denying the consumers the ability to override HCALCS.
- SRV7.11 will allow the Electricity Distributors to read the Boost Button details.

Note; the Medium priority Requirement 4 will have a relatively Low impact on the solution timelines and cost.

## 3.3 Other System Changes

There will be an impact on the Parse and Correlate application provided by Critical Software to reflect the new DUIS definition and GBCS, including updated SRV definitions and GBCS Use Cases as noted following. These changes may include the following:

| | | |
|---|---|---|
| Use Case Specifications | Test Reports | API Release Notes |
| Test Approach | Installation Document | Traceability Matrix |
| Test Case Specifications | Software Architecture Specification | Release Notes |

## 3.4 Technical Specification Changes

In terms of DUIS, there will be updates to existing Service Requests or new Service Requests, which demands integration testing. These changes will be delivered via an incremental uplift to the current version.

DUGIDS documentation will be updated to reflect changes in user access to the Service Requests required to be accessed by the Electricity Distributors with the user role ENO.

The GBCS Use Case ECS47 associated with the SRVs 7.6 and 7.8 and the GBCS Use Case ECS62 associated with SRVs 7.9 and 7.10 currently support only the EIS user role. These GBCS Use Cases will therefore need to be replaced with the equivalents that also support the user role ENO.

In the case of GBCS Use Case ECS61c associated with SRV 7.11, it is possible for the ACB to use the Unknown Remote Party processing pattern when received from an ENO. This processing pattern has been used in SECMP0025 to allow ENOs to submit SRV 7.7. Alternatively, a replacement of ECS61c that supports ENO user role may also be created.

The following table summarises the impacted Service Request Variants, their general attributes and the associated GBCS Use Cases.

| Service Reference | Service Request Description | SMETS1 | On Demand | DCC Only | Future Dated | Scheduled (meter) | Scheduled (DSP) | Critical | Sensitive | Pre installation | Additional processing Logic | User Access Roles | Existing GBCS Use Case | Require new GBCS Use Case |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7.6 | Deactivate Auxiliary Load | N | Y | N | N | N | N | Y | N | N | N | EIS ENO | ECS47 | Y |
| 7.8 | Reset Auxiliary Load | N | Y | N | N | N | N | Y | N | N | N | EIS ENO | ECS47 | Y |
| 7.9 | Add Auxiliary Load To Boost Button | N | Y | N | Y | N | N | N | N | N | N | EIS ENO | ECS62 | Y |
| 7.10 | Remove Auxiliary Load From Boost Button | N | Y | N | Y | N | N | N | N | N | N | EIS ENO | ECS62 | Y |
| 7.11 | Read Boost Button Details | N | Y | N | Y | N | N | N | N | N | N | EIS ENO OU | ECS61c | Optional |

The input XML formats of these Service Requests are expected to remain unchanged.

However, the firmware running on target Devices will need to have the GBCS Use Cases that permit access to ENOs. If the SRVs submitted by ENOs are targeted at a Device that does not support the new Use Cases, then they will be rejected by DCC Data Systems.

# 4 Impact on DCC Systems, Processes and People

This section describes the impact of SECMP0063 on DCC Services and Interfaces that impact Users and/or Parties.

## 4.1 Security Impact

The implementation will be security assured during the implementation phase. This includes reviewing designs, test artefacts and providing consultancy to the implementation and test teams.

There are no material changes to interfaces or the security solution as part of this change and therefore a penetration test is not required in response to this CR. There will not be any changes to the DSP protective monitoring solution as result of this CR.

A more detailed Security impact will be carried out as part of the Full Impact Assessment.

## 4.2 Request Management

Request Management will need to handle the revision in GBCS use cases and the associated processing changes.

## 4.3 Data Management

Data Management will need changes to update the reference data that manages the user access configuration data.

## 4.4 Transform

New libraries for the replacement of GBCS Use Cases ECS47, ECS62, and potentially ECS61c will need to be implemented by Transform. These new libraries will be based on the existing implementation.

## 4.5 Application Support

On the basis that updates to configuration will be charged under separate Operational Change Requests, it is not expected that there will be any change to ongoing levels of support as a result of the change. There will need to be some updates to service procedures in advance of the new solution being deployed to the Production system.

## 4.6 Service Impact

This change introduces new functionality within the DCC Data Systems. As such, the Operational Service will require an uplift in order to support and maintain the solution. Immediately after Go Live, DSP expects to provide an uplifted level of support to ensure any unexpected issues are rectified quickly and to allow the service to bed in.

## 4.7 Integration Impact

It is assumed that the change will be implemented, integrated, and tested as part of the November 2020 release. The functionality will need to be validated in both the Systems Integration Testing (SIT) and User Integration Testing (UIT) environments and will require integration tests that involve both DSP and the CSPs as a minimum. It is assumed that it will be integrated as part of the November 2020 release. An initial estimate of the costs for integration (PIT) testing of the Modification are included in this PA. The costs exclude release based regression testing in SIT and UIT.

## 4.8 Infrastructure Impact

There will be no change to the infrastructure design as a result of this change. Additional processing and storage will be required, however, they are not sufficiently large to warrant the procurement of additional compute power or storage as part of this Modification. Note that the aggregated impact of many such changes to the DSP solution will ultimately result in a reduction of the available processing headroom assumed as part of the original DSP agreement. As such, DSP may need to raise a Change Request (CR) for the provision of additional infrastructure should the DCC Data System experience performance problems that are the direct result of such changes.

The change does not impact the DSP resilience or DR implementation.

## 4.9 Safety Impact

No impact is expected, but a full Safety Impact Assessment will be carried out as part of the production of the FIA.

## 4.10 Contract Schedules

Schedules will require modification to reflect the changes necessitated under this Modification. Contract schedules will be updated as part of a Contract Amendment Note (CAN) which combines schedule updates from other relevant CRs.

A minor change to one DSP contract is expected.

# 5 Implementation Timescales and Approach

Notwithstanding in which release this change is implemented, based on the currently stated requirements, the elapsed time for Service Provider implementation will be between 3 – 6 months following the provision of full commercial cover.

The release lifecycle duration will be confirmed as part of the Full Impact Assessment (FIA). As currently planned , the standard ongoing major release model will provide drops to the production environment in November 2020.

## 5.1 Implementation Approach

Implementation of this change is assumed to follow a waterfall methodology. The release lifecycle duration will be confirmed as part of the full impact assessment. The standard ongoing major release model will provide drops to the production environment in June and November each year and as stated, it is assumed this Modification will be included in the November 2020 release.

## 5.2 Testing and Acceptance

It is assumed that the change will be implemented and tested as part of a major release, and will include release based regression testing in SIT and UIT.

# 6 Costs and Charges

The table below details the cost of delivering the changes and Services required to implement this Modification Proposal.

The scope of supply under this PIA includes design, development, system testing, performance testing within DSP's PIT environment, Systems Integration Testing of the functional change, User Integration Testing of the functional Change, Service Preparation by the Application Management support team and ongoing application support of the new functionality is not in scope. The Rough Order of Magnitude cost (ROM) shown below describes indicative costs to implement the functional requirements as assumed now. The price is presented as a +/-15% range and is not an offer open to acceptance. It should be noted that the change has not been subject to the same level of analysis that would be performed as part of a Full Impact Assessment and as such there may be elements missing from the solution or the solution may be subject to a material change during discussions with the DCC. As a result the final offer price may result in a variation outside of the indicative range.

## 6.1 Design, Build, and Testing Cost Impact

The table below details the cost of delivering the changes and Services required to implement this Modification.

| Implementation Costs | | | | | | | |
|---|---|---|---|---|---|---|---|
| SECMP0063 | **Design** | **Build** | **Pre-Integration Testing** | **System Integration Testing** | **User Integration Testing** | **Implement to Live** | **Total** |
| Cost | *£560,000* | | | *Not included* | *Not included* | *Not included* | **£560,000** |

| Supplementary Information | |
|---|---|
| Implementation cost assumptions | *A. Costs are exclusive of VAT and any applicable finance charges*<br>*B. Majority of the costs above represent labour costs.*<br>*C. Costs provided for Design, Build and Pre-Integration Testing are quotes provided by the Service Providers with specific exclusions of costs as identified above. DCC have reviewed and challenged the costs from the Service Providers to ensure this reflects best price to date.*<br>*D. Costs will be refined during future assessments.* |
| Explanation of Implementation Phases | *DCC's implementation costs are provided by implementation phases. The following describes the purpose of each phase:*<br>• *Design: The production of detailed System and Service design to deliver all new requirements.*<br>• *Build: The development of the designed Systems and Services to create a solution (e.g. code, systems, or products) that can be tested and implemented.* |

| | |
|---|---|
| | • *Pre-integration Testing (PIT): Each Service Provider tests its own solution to agreed standards in isolation of other Service Providers. This is assured by DCC.*<br><br>• *System Integration Testing (SIT): All Service Providers' PIT-complete solutions are brought together and tested as DCC's Total Solution, ensuring all Service Provider solutions align and operate as an end to end solution.*<br><br>• *User Integration Testing (UIT): Users are provided with an opportunity to run a range of pre-specified tests in relation to the relevant change.*<br><br>• *Implementation to Live: The solution is implemented into Production environments and ready for use by Users as part of a live service. This service is subject to implementation costs.* |

For the existing requirements, the fixed price cost for a Full Impact Assessment is **£15,436.21** and would be expected to be completed in 30 days.

# 7 Risks, Assumptions, Issues, and Dependencies

In the following sections Risks, Assumptions, Issues, and Dependencies have been identified.

It is possible that further RAID will be established as part of the Working Group reviews and FIA.

## 7.1 Risks

None at this time.

## 7.2 Assumptions

| Ref. | Area | Description | Accept |
|---|---|---|---|
| MP46-AD01 | SIT, UIT, TTO | Assume that the change will be implemented and tested as part of a major DCC release. | Accepted |
| MP46-AD02 | Boost as part of Charger | The requirements state 'It is also possible that the boost capability could be provided as part of the EV charger'. This PIA expects that management of such a mechanism would be primarily conducted within the HAN boundary and the boost/override configuration set in the ESME may also be applied to a supported EV Charger. It is unclear whether it requires any changes to DCC Data systems and requires further elaboration. As such, the estimates presented in this PIA assume that DCC Data Systems will be unaffected by this. | |
| MP46-AD03 | ED Priority | The document suggests that DCC Data Systems will need to give priority to the Electricity Distributor (ED) over other eligible User Roles when sending the messages to control the EV Chargers. Please note that it is not possible to prioritise Service Request processing based on the User Role, as currently such a mechanism does not exist. The estimates presented here assume this requirement is not in scope. | |

## 7.3 Issues

None at this time.

## 7.4 Dependencies

| Ref. | Area | Dependency | Impact |
|---|---|---|---|
| MP46-DD01 | SEC | To help Electricity Distributors identify the HCALCS switch connected to the Electric Vehicle, HCALCS labels will need to be made compulsory. Although the technical solution of SECMP0019 provides the capability to manage labels, the Service Users are not currently obliged to apply labels. DCC notes that any guidance to make the HCALCS labels compulsory will need to be formalised by SEC. | High |

# Appendix A: Glossary

The table below provides definitions of the terms used in this document.

| .Acronym | Definition |
|---|---|
| ACB | Access Control Broker |
| ASP | Ancillary Services Provider |
| CAN | Contract Amendment Note |
| CR | DCC Change Request |
| DCC | Data Communications Company |
| DNO | Distribution Network Operators, used interchangeably with Electricity Distributor in this document |
| DSP | Data Service Provider |
| DUIS | DCC User Interface Specification |
| ESME | Electricity Smart Metering Equipment |
| FIA | Full Impact Assessment |
| GPF | Gas Proxy Function |
| HAN | Home Area Network |
| HCALCS | HAN Connected Auxiliary Load Control Switch |
| MPAN | Meter Point Administration Number |
| PIA | Preliminary Impact Assessment |
| PIT | Pre-Integration Testing |
| ROM | Rough Order of Magnitude (cost) |
| SEC | Smart Energy Code |
| SECAS | Smart Energy Code Administrator and Secretariat |
| SIT | Systems Integration Testing |
| SMKI | Smart Metering Key Infrastructure |
| SMIP | Smart Metering Implementation Programme |
| SP | Service Provider |
| SR | Service Request |
| TTO | Transition to Operations |
| UIT | User Integration Testing |

# Appendix B: Non-Functional Requirements

| # | Description | Applies To | Status | Notes |
|---|---|---|---|---|
| NF1 | The solution shall apply to domestic customers only | Customer | Must | |
| NF2 | Customers would be notified about a request to reduce their charge and customers have the option to reject a DNO's request to intervene. | Customer | Must | Outside the SEC Mod Technical Solution<br>Term DNO is equivalent to Electricity Distributor in this table |
| NF3 | If a Change of Tenancy (CoT) takes place, the DNO must engage with the customer and seek permission to Load Control | Customer | Must | Outside the SEC Mod Technical Solution |
| NF4 | The DNO shall inform customers of a load limiting event via chosen communications channel | Customer Reporting | Must | Outside the SEC Mod Technical Solution |
| NF5 | The solution should address more than EVs, but also other high wattage devices | Device | Could | Future consideration |
| NF6 | Load Control functionality must be available for SMETS2 Comms Hubs | Device | Must | |
| NF7 | Load Control functionality must be available for Dual Band Comms Hubs | Device | Must | |
| NF8 | Instructions shall be transmitted through the SM HAN and participating devices must be interoperable | Device | Must | |
| NF9 | Control of the EV Charger should be on a near real-time basis rather than sending scheduled or batch commands | Response Time | Must | GBCS Use Cases must be applicable and available |
| NF13 | The time of response from issuing a Load Control command to a reduction of charging shall be 30 seconds or less | Performance | Must | We will specify Target Response Time at 5 seconds |
| NF10 | Once consistently managing EV demand (i.e. charge management activity every month) the DNO would have a maximum of 6 months of its continuous active use to find a suitable market-led solution or choose to reinforce, with a subsequent 12 month period to then | Customer and Governance | Won't | Outside the SEC Mod Technical Solution |

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| | implement the market/smart or reinforcement solution. | | | |
| NF11 | The Maximum amount of charge management in 24 hours: no more than the equivalent of each charger being switched off for 2 hours | Customer and Governance | Must | Where the solution exceeds these limits the DNO will expediate a market/smart or asset-based solution while utilising mobile generation or energy storage to maintain supply |
| NF12 | The maximum amount of charge management in 30-days: no more than the equivalent of each charger being switched off for 8 hours | Customer and Governance | Must | Where the solution exceeds these limits the DNO will expediate a market/smart or asset-based solution while utilising mobile generation or energy storage to maintain supply |
| NF14 | In cases where DNO contracts with Ancillary Services Provider (ASP) to manage load locally, any load balancing event is called off against the ASP contract | DNO Contract with Ancillary Services Provider | Must | |